form of environmental stress parameter such as humidity, radiation, vibration or a combination thereof may be used to stress the modules 15 under test. The invention is also capable of introducing noise into the test signal and/or degrading the test signal strength to apply other forms of stress to the modules 15 under test.

Fig. 1a illustrates the logical grouping 30 that is a key aspect of the virtual oven 10. Conventional burn-in systems require modules being tested to be physically adjacent. A logical grouping 30 of modules groups modules 30 that are not necessarily physically adjacent. For example, different equipment racks can be used to hold the modules of a logical group while they undergo burn-in testing.

Also, an equipment rack may be partially loaded with modules and each module loaded in the partially filled rack designated as a logical group 30 by the inventive software. When the equipment rack is then filled, those modules may form another logical group 30. Such logical grouping 30 permits the invention to be highly modular and adaptive to the manufacturing environment.

The ESSR 5 may include one or more virtual ovens 10, but preferably there is more than one virtual oven 10 per ESSR 5 as shown in Figs. 1a and 1b. Each virtual oven includes one or more logical groups 30 of modules 15 and associated test equipment 25.

In practice, the virtual oven will include a large number of logical groups 30 but at a minimum each virtual oven will include at least one logical group 30. The number of modules 15 within each logical group 30 may also vary but a typical number is two to eight modules 15 per logical group.

Furthermore, each logical group 30 within the virtual oven 10 includes an associated clock or timer 12 that is started after the logical group 30 of modules 15 is loaded into the ESSR 5 and when the testing of that logical group 30 begins.

The virtual oven 10 logical module grouping concept and associated control permits the invention to be highly modular and adaptive to the manufacturing production line feeding modules 15 to the burn-in system 1. Conventional systems typically load a large batch of modules into an oven, attach test equipment to each module and gather data from the modules as they are being tested. If only a few modules are completed, then only a small portion of the oven would be utilized to conduct the burn-in test with a corresponding gross reduction in oven throughput and efficiency. In other words, the conventional burn-in systems do not permit asynchronous loading and test starting of an arbitrary number of modules.

In contrast, each logical group 30 of each virtual oven 10 provides a modular platform for loading and testing an arbitrary number of modules 15. As batches of modules 15 are completed, the logical groups 30 may be loaded and a corresponding burn-in test started. When the next batch of modules 15 is completed another logical group 30 within the same or a different virtual oven 10 can be loaded and another burn-in test started.

Fig. 1b further extends the virtual oven 10 concept. As shown in Fig. 1b, all or most of the equipment for a virtual oven 10 can be physically located within the environmental stress screening room 5. Particularly, the test equipment 25 and timer 12 associated with each logical group 30 of each virtual oven 10 may be physically located within the environmental stress screening room 5. This alternative is generally not preferred because

the test equipment 25 would be subjected to repeated environmental stress cycles as each logical group 30 of modules 15 is subjected to a burn-in test.

It is also possible for a virtual oven 10 to span more than one environmental stress screening room 5. As described above, the invention divorces the conventional physical relationship of test equipment with the modules under test and replaces such conventional solutions with a logical grouping 30 of modules 15 and associated test equipment 25. Having a virtual oven include more than one physical ESSR 5, however, is generally not preferred because it complicates the connections and control routines as well as the logistics of physically loading and unloading the physical ESSRs 5.

The virtual oven concept also permits logical groups 30 of modules 15 within one or more ESSRs 5 to be subjected to different environmental stresses. If two or more logical groups 30 are located within a single ESSR 5 (the generally preferred embodiment) then different environmental stresses may be applied by applying a different control regime and perhaps using additional equipment for different areas within the ESSR 5.

For example, some logical groups 30 of modules 15 may be denser than others such that they have a greater thermal mass and greater hysteresis. To compensate for these differences, fans may be added to the ESSR 5 pointing at the logical group 30. In this case, the modules 15 of this particular logical group 30 would preferably be physically located in the same area. By using and controlling the fans, for example, a different environmental stress could be applied to that particular logical group.

As stated above, any form of environmental stress parameter such as humidity, radiation, vibration or a combination thereof may be used to stress the modules 15 under test. The virtual oven 10 and/or the logical groups 30 may be used as a basis to apply